APPENDIX A

Opinion of February 12, 1960.

(in part)

(188 F. Supp. 879.)

GENERAL RADIO COMPANY, a Corporation, Plaintiff,

v.

ROBERT C. WATSON, Commissioner of Patents, Defendant.

Civ. A. No. 4459-56.

United States District Court
District of Columbia.

Feb. 12, 1960.

Robert H. Rines, Boston, Mass., and Nelson H. Shapiro, Washington, D. C., for plaintiff.

C. W. Moore, United States Patent Office, Washington, D. C., for defendant.

MORRIS, District Judge.

This is an action brought under 35 U.S.C. § 145 by the plaintiff, as the assignee of an application for patent by one of its electrical engineers, Gilbert S. Smiley, for "Method of and Apparatus for Improving the Stability of Continuously Adjustable Transformers and the Like," Serial No. 221,878, filed April 19, 1951, seeking to have the Court authorize the issuance to it of a patent. After the final rejection by the Patent Office examiner on February 15, 1955, of claims 15 and 23 through 33, the applicant filed on May 10, 1955, a proposed amendment substituting claim 34 for

all such rejected claims. On May 17, 1955, the examiner refused allowance of claim 34, but entered it only for purposes of an appeal. The Board of Appeals (hereinafter referred to as the Board) on June 18, 1956, affirmed the examiner's refusal of claim 34, the single claim before this Court, and which reads as follows:

> "34. A variable-impedance auto-transformer having, in combination, a copper-wire single-layer substantially toroidal winding wound in successively disposed turns about an annular core to provide along the exterior of the winding a track extending across the successively disposed turns, there being bonded to the turns along the track coatings selected from the group consisting of gold, platinum, palladium, rhodium, silver and nickel, means for connecting the winding to a source of voltage, the winding being adapted to be connected also with a load circuit to exchange current with the load circuit at values not greater than a predetermined safe value above which the winding would become damaged by such exchange of current, and a carboniferous or graphitic resistive brush actuable along the track in contact with the coatings and adapted for connection with the load circuit, the width of the brush being greater than the distance between two successive turns of the winding in order that the brush may establish contact with the coating bonded to a turn before breaking contact with the coating bonded to the adjacently disposed turn with which it last contacted, thereby to prevent interruption of the current in the load circuit into the brush, means for connecting a point of the winding and the brush to the load circuit, and the brush being rotatable about the axis of the toroidal winding along the said track in engagement with the coatings of the successively disposed turns, the coatings maintaining the resistance between the brush and the track, during passage of the current of the predetermined safe value between them, substantially constant."

The invention claimed herein consists of plating gold, platinum, palladium, rhodium, silver and nickel to the turns along the brush track of the device disclosed in application No. 2,009,013, of Karplus, et al., dated July 23, 1935 (of which plaintiff is also assignee, and which device has been manufactured and sold by it under the trade name of Variac, and by its licensees in this country and others under differing trade names, for many years), and of the discovery of the reason for the failure of the Karplus device, stated in the application as follows:

> "It has been found, however, that when the apparatus is in continuous use, particularly at elevated temperatures and in regions where industrial vapors or other corrosive influences are present, the copper track detrimentally oxidizes, contaminates and corrodes, markedly and rapidly increasing, and thus rendering unstable, the resistance of the brush-to-copper-track interface. With long periods of continuous use, indeed, a progressively destructive cycle is often initiated in which the increasing oxidation, contamination and corrosion of the track during the use of the instrument increases the brush-to-track resistance which, in turn, further increases the temperature at the contact between the brush and track, which still further increases the oxidation, contamination and corrosion, until failure or improper operation of the instrument results from the high temperature."

The original autotransformer, on which Karplus was issued a patent, operated satisfactorily when used almost exclusively in laboratories, where the use was intermittent and the atmosphere clean. During and after World War II the transformer was employed more and more in industrial use, where the use was continuous and the atmosphere was contaminated. Then complaints became more and more frequent because the autotransformers were being burned out. Many methods were employed to elim-

inate or reduce these failures: The customers were instructed to keep the brush tracks cleaned by removing carbon particles and washing with carbon tetrochloride, the brushes were redesigned, the heat radiators were redesigned, in 1946 a beryllium-copper brush spring was employed to obtain a uniform spring pressure on the brush, which lost tension under the "hot spot" temperature in the region of the brush, and which was substituted in 1949 with a stainless steel brush spring, efforts were made to cool the auto-transformer by blowing air on it, using a blower and a fan, and by oil cooling pigtails, or conductors, were employed to carry the current from the block containing the carbon and to help carry the heat out of the block. All these efforts, it was testified, delayed the eventual burn-out of the tracks, but were not successful in preventing their ultimate destruction by such burn-out. In order to save face with its customers, plaintiff eventually supplied considerably larger instruments than the size indicated by the need of the customer. Mr. Smiley, whose assignee plaintiff is respecting the application here involved, testified that in 1948 (Tr. 86):

> "* * * we began to suspect that there was an action occurring that we hadn't been able to explain by ordinary—these techniques that we said, the track got dirty from the brush, got dirty from contamination—but there seemed to be something more, and at that time I began to suspect that there was a formation of a high-temperature oxide, the cycle being initiated by some chance or haphazard occurrence, but once that cycle had been initiated it was a destructive, a vicious circle of oxide forming, poor contact, more heat, more oxide, and this was the cause of burnout.
>
> "So, the first thing we thought was to keep air away from the area around the brush and the track. At that time the Dow Corning Company announced a high-temperature silicone grease, and we tried it, and

it seemed to help; it wasn't perfect, but it certainly delayed burnout, and so we recommended it to our customers who were having burnout trouble."

In addition to the above efforts to correct the apparent inherent destructive quality of the apparatus, attempted improvements in the iron core, around which the copperwire forming the brush track was wound, were made in an effort to improve the thermoconductivity so as to lower the temperature of the "hot spot" and thereby reduce the total amount of heat generated in the transformer. This latter effort also failed to result in a solution of the problem. At this stage of developments, Mr. Smiley testified (Tr. 92-94):

"It occurred to me that since we—no matter what we tried to do we were getting this progressive high-temperature oxidation of the track, and this was a phenomena associated with copper, that if we could use some other metal than copper, it might be possible to find a metal that would work. And, naturally, I think anybody who is familiar with metals knows that such materials as gold and platinum and silver might be expected to work. However, they are extremely expensive materials. This is a commercial product. You wouldn't expect to wind a transformer like this with gold or platinum or even silver wire, and be able to sell it for the same price that you sell one wound with copper wire.

* * *

"I finally thought if possibly [sic] we could apply some metal other than copper to the brush track, and brush track only—that portion of the wire which was bared for contact with the brush—it might be possible to prevent this destructive cycle.

* * *

"* * * We had thought that the brown copper oxide, the type that forms on a penny—an old penny—

> was a good thing because it interposed at this point where we want the resistance—it interposed a fairly stable uniform resistance. In fact, when we would manufacture these the insulation and part of the copper was [sic] removed by a grinding operation. When they were bright and shiny they very often would show on our tests too low a resistance, and we have a test that shows that at the brush-to-copper interface.
>
> "Our standard procedure then was to put the transformer aside a week or two—sometimes a month. The track would oxidize with this normal, low-temperature oxide, and they would pass the test and we would ship them out."

There can be no question but that the method discovered by Mr. Smiley, employed by plaintiff, and described in the application constitutes a marked improvement over the original patented device, especially when employed in industrial plants, and that it has completely overcome the failure difficulties inherent in the original device for such use. Depositions of a number of plaintiff's customers were to this effect, as was testimony of employees and an officer of plaintiff. Plaintiff's competitor licensees in this country and elsewhere have adopted and employed the method in their products, and plaintiff has been issued a British patent thereon. Indeed the Board did not deny the commercial acceptance and the obvious success of the method discovered by Mr. Smiley, and affirmed that "the problem of transformer failure under certain adverse conditions or operation was an illusive matter for some period of time," and that the "problem of transformer failure was not found until an extensive research program was conducted." The Board, however, thought the problem recognized and solved by plaintiff was basically the same as the problem recognized and solved by Sedgfield, British Patent No. 620,284, dated March 22, 1949, relating to "wire-wound potentiom-

eters" and having "for its object the provision of means for preventing the development of contact irregularities due to corrosion or tarnishing of the contacting portions of such devices. This object is accomplished in the patent by "plating with a metal which is both corrosion—or tarnish-resistant and hard enough to give a good wearing surface to the "winding of insulated resistance wire whose insulation is removed from adjacent turns to form a track for the wiper" of such potentiometer. The wire of the winding is disclosed as "resistance wire of any desired type."

On July 17, 1956, plaintiff filed with the Board a motion to remand to the primary examiner and motion for reconsideration or rehearing, in which it was stated it had arranged by sending one of its attorneys to Europe to obtain an affidavit of Mr. Robert Hayes Nisbet, named in the British patent cited as a reference, which affidavit would be transmitted to the Board promptly upon its receipt. On October 22, 1956, the Board refused the request to remand because its rule that affidavits submitted after appeal will not be admitted without a showing of good and sufficient reasons why they were not earlier presented had not been satisfied.

At the trial in the instant proceedings plaintiff introduced into evidence the deposition of the British patentee, Colonel Hugh Sedgfield, and that of his attorney who prepared the patent, Mr. Robert Nisbet. The Solicitor of the Patent Office was also present at the taking of such depositions and cross-examined Colonel Sedgfield.

The plaintiff has set forth in an appendix to its brief numerous dissimilarities in the devices involved in its application and in the Sedgfield patent.

From this list of dissimilarities, it is readily discernible that, while the plating of the contact tracks of each device

resolved the difficulty in each, and such plating in each instance was done to make the contact resistance (between resistive carbon brush and copper track in plaintiff's autotransformer and between nonresistive metal wiper and metal track in the Sedgfield potentiometer) constant, there was quite a difference in the underlying problem in each which made such plating and constant resistance necessary. Plaintiff's need for a constant resistance was to prevent *high-temperature* copper oxide contamination and corrosion from causing a destructive burn-out cycle which rapidly increased the resistance between brush and track by generating more high temperature, which generated further high temperature, high-resistance copper oxide, which generated more heat, et cetera, until burnout resulted. The need for a constant resistance in the Sedgfield device was to prevent *low-temperature* corrosion or tarnish or the like from causing "contact irregularities" or "bumps" which caused its delicate wire wiper, while moving back and forth along the track, to "chatter," and make erratic electrical contact, and thus to provide erratic electric signals for correcting the flight of aircraft. The low-temperature oxide, which was detrimental to and the problem respecting the Sedgfield device, is beneficial in plaintiff's autotransformer, which needs a bad or resistive contact of finite value to prevent short-circuiting. Only one of the metals, rhodium, found to be effective for plating the Sedgfield device is also effective for plating plaintiff's autotransformer, and the unqualified expert testimony was that Sedgfield's teaching that rhodium would not tarnish or corrode at low- or room-temperature, while operated under controlled conditions, does not teach that rhodium will not corrode or oxidize under the high temperature created by the carbon-to-copper contact of plaintiff's autotransformer while operated in industrial and other uncontrolled areas. I am of opinion that plaintiff's method of

solution, as set forth in its application, a very important part of which was the discovery of the problem inherent in the Karplus autotransformer when employed in industry as opposed to a laboratory, is patentable over the cited references of Karplus, et al., Shoemaker and Sedgfield.

The Patent Office Solicitor introduced the additional reference of the prior art as taught by statements contained in the Hunt textbook, Electrical Contacts, published in May, 1946. Out of context and at first blush, these statements would appear to teach that plaintiff's problem and solution would have been obvious to one skilled in the art. However, as explained by Mr. Smiley on cross-examination by the Solicitor of the Patent Office, and on redirect examination, all the statements relate to low-temperature, metal-to-metal contacts, such as the problems involved in the Sedgfield patent. At the trial, the Solicitor read yet another statement from Hunt dealing with rhodium (the only metal which works satisfactory in both plaintiff's application and the Sedgfield patent):

> "Rhodium is even more inert chemically to most reagents than platinum, but it may tarnish if heated to high temperatures in air."

Hunt does not deal with autotransformers, copper-to-carbon resistive contacts, nor does Hunt disclose the cause of the burn-out difficulties experienced in the autotransformers. If Mr. Smiley had followed Hunt's teachings that rhodium tarnishes "if heated to high temperatures in air," that platinum is even less "inert" than rhodium, and that silver can only be used "where operation is not frequent," he may never have tried these metals for the solution of the very high-temperature burn-out problem.

With reference to the Patent Office Solicitor's characterization of Mr. Smiley's testimony as self-serving, the

Court was impressed with both the integrity and ability of the witness. If the Patent Office wishes to discredit expert or lay testimony, the obvious method would be to provide witnesses for that purpose.

For the reasons stated, I am of the opinion that there is lacking a rational basis for the finding by the Board, and the Commissioner of Patents will be authorized to issue to plaintiff a patent for the invention as specified in claim 34.

Counsel will prepare an appropriate order to carry into effect this decision.

APPENDIX B

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

(321 F.2d 857)

No. 14,077

GENERAL RADIO COMPANY,
Defendant, Appellant,

v.

THE SUPERIOR ELECTRIC COMPANY,
Plaintiff, Appellee.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY

Argued January 22, 1963

Before: STALEY and SMITH, *Circuit Judges*, and SHAW, *District Judge*.

Opinion of the Court

(Filed August 23, 1963)

SMITH, *Circuit Judge*.

The plaintiff, having been notified that an article of its manufacture infringed a patent owned by the defendant, brought this action under the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202, seeking an adjudication of the controversy. The defendant filed an answer and counterclaim charging the plaintiff with patent infringement and unfair competition. The plaintiff filed a reply

in which it pleaded the usual defenses. The present appeal is from a judgment in favor of the plaintiff on the issues of patent validity and unfair conpetition.[1]

Patent Validity

The defendant is admittedly the owner of Patent No. 2,949,592, which issued on the application of one Gilbert Smiley. The patent covers an article of manufacture therein described as an "adjustable autotransformer" which, like the ordinary transformer, is used to control current and voltage in alternating current electric circuits. The autotransformer is placed across the supply circuit and is so disposed between it and the load circuit as to permit the adjustment of current and voltage, either upwardly or downwardly, to the requirements of the load circuit. It differs from the ordinary transformer in that one of the windings is connected in series with the other, thereby forming the equivalent of a single winding.

The patent contains a single claim which describes the alleged invention as follows:

> "A variable-impedance auto-transformer having, in combination, a copper-wire single-layer substantially toroidal winding wound in successively disposed turns about an annular core *to provide along the exterior of the winding a track extending across the successively disposed turns, there being bonded to the turns along the track coatings selected from the group consisting of gold, platinum, palladium, rhodium, silver and nickel*, means for connecting the winding to a source of voltage, the winding being adapted to be connected also with a load circuit to exchange current with the load circuit at values not greater than a pre-

1. The trial court's findings of fact and conclusions of law are set forth in a comprehensive and well-reasoned opinion reported in 203 F. Supp., at page 864.

determined safe value above which the winding would become damaged by such exchange of current, and a *carboniferous or graphitic resistive brush actuable along the track in contact with the coatings and adapted for connection with the load circuit, the width of the brush being greater than the distance between two successive turns of the winding in order that the brush may establish contact with the coating bonded to a turn before breaking contact with the coating bonded to the adjacently disposed turn with which it last contacted*, thereby to prevent interruption of the current in the load circuit into the brush; means for connecting a point of the winding and the brush to the load circuit, and *the brush being rotatable about the axis of the toroidal winding along the said track in engagement with the coatings of the successively disposed turns*; the coatings maintaining the resistance between the brush and the track, during passage of the current of the predetermined safe value between them, substantially constant." (Emphasis added).

The alleged invention is essentially an improvement on the invention described in Patent No. 2,009,013, granted to Eduard Karplus and William Tuttle, to which specific reference is made in the patent in suit. This patent had expired at the time this action was brought.

The alleged invention is comprised of the following structural elements: (a) an impedance or choke coil consisting of insulated copper wire toroidally wound in successively disposed turns about an annular core or iron or laminated steel, the adjacent turns being sufficiently spaced to prevent contact with each other; (b) a circumferential commutator track produced by removing the insulation from the adjacent turns of the coil so as to permit brush-to-track contact at successive radial positions around the track; (c) a coating made of an alloy of any one of several oxidation-resistant metals such as silver, gold,

platinum, rhodium and nickel, bonded to the exposed turns of the track; (d) a "carbon brush,"[2] wider than the space between the adjacent turns, rotatably mounted on an axial shaft and so disposed in relation to the commutator track as to permit brush-to-track contact at successive rate positions.

The claim to patentable invention necessarily rests as the defendant concedes, on the utilization of an oxidation-resistant coating on the exposed turns of the winding as a means to prevent the formation of cupric oxide which adversely affects the stability of brush-to-track resistance essential to the efficient operation of the autotransformer. Except for this feature, the patent in suit covers nothing more than an assemblage of structural elements, fully described in the patent to Karplus and William, in an autotransformer in which they perform no functions different from those theretofore performed in earlier devices. The patent in suit must therefore be scrutinized "with a care proportioned to the difficulty and improbability of finding invention" in such an assemblage. *A. & P. Tea Company v. Supermarket Corp.*, 340 U.S. 147 (1950). The claim to invention must be appraised here in the light of the prior art considered in its entirety. Ibid.

The British patent to Sedgfield, issued on March 22, 1949, more than two years prior to the application for the patent in suit, relates to an improved potentiometer. This is an instrument for measuring galvanometrically electromotive force, the force which causes the movement of cur-

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2. The "carbon brush," known in the art long prior to the patent in suit, is made of a composition in which carbon, in one or another of its allotropic forms, is a constituent. The "carbon brush" is employed in autotransformers because of its low resistance to the flow of useable current and its high resistance to stress resulting from short circuit voltage.

rent through a conductor. While the potentiometer differs from the autotransformer in function and operation, it is comprised of structural elements similar to those of the autotransformer, to wit, (a) an impedance coil of low resistance wire made of an alloy of nickel, platinum, gold or silver, known to be resistant to oxidation; (b) a commutator track produced by removing the insulation from the adjacent turns of the coil so as to permit wiper-to-track contact; (c) a "wire wiper," known in the art, made of wire of suitable conductivity and so disposed with relation to the track as to permit contact. It is essential to the operation of the instrument that the wiper-to-track resistance be stabilized at a low level.

It was apparently known prior to Sedgfield that the sensitivity of the potentiometer, and consequently its accuracy, was adversely affected by the formation of tarnish on the commutator track.[3] Sedgfield discovered and recommended that this condition could be prevented by electroplating the exposed turns of the impedance coil with an alloy of rhodium, an element of the platinum group. The significance of his patent lies in its disclosure that metals susceptible to tarnish formation, when exposed to deleterious atmospheric conditions, could be protected against such formation by coating them with another metal resistant to such conditions. It would have been obvious to a skilled mechanic, having a knowledge of the disclosure and a basic knowledge of the properties of metals, that a copper surface could be similarly protected against oxidation by the application of a coating of any one of several suitable metals.

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3. The noble metals such as gold, silver, etc., although highly resistant to oxidation, are susceptible to the formation of tarnish, a thin film of the metallic sulfide, when exposed to certain atmospheric conditions.

An apposite reference is Hunt, "Electrical Contacts," a textbook published in May of 1946, from which the following quotations were taken:

> "Copper, . . . cannot be regarded as suitable material[s] for contacts in applications *where a low contact resistance is required.* Even at room temperature a sufficiently thick film forms on copper in a few hours *to increase the contact resistance* many times as compared with that obtained with chemically clean contacts. (p. 17).
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> "Film formation will cause *increased contact resistance, and can lead to a vicious spiral of increasing temperature rise and increasing film formation.* In this connection therefore the relative tendency of each material *to form oxide,* sulphide or other films under varying conditions should be appreciated. (p. 73).
>
> "Copper, which is widely used, has the advantage of possessing high thermal conductivity and high specific heat, but has *serious limitations in another respect which make it unsuitable for contactor contacts as conditions increase in severity.* It is liable to severe over-heating *owing to the formation of a high-resistance oxide film, a vicious circle being set up as the temperature rises, causing further oxidation and still greater rise of temperature.* Such overheating leads to increased electrical wear and to welding of the contacts. *Even on light duties, however, it will be found that silver shows a considerable advantage over copper,* particularly where operation is not frequent, and the long idle periods give rise to films of copper oxide. (p. 50).
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> "Overheating of the contacts can be prevented almost entirely by the use of fine silver. The usual procedure is to insert *a facing of silver,* of the order of one-sixteenth inch in thickness, *into the copper contact by silver brazing,* the size of facing depending upon the area over which contact is made." (p. 51). (Emphasis added).

Hunt also teaches that the copper contact may be faced or coated also with either platinum or rhodium, which are highly resistant to both oxidation and tarnish; in fact, platinum is immune to oxidation and rhodium oxidizes only at very high temperatures. See also Wise, "Electrical Contacts."

When the Hunt disclosures are considered with reference to the common knowledge of the art, their relevant significance becomes apparent. It was known that in the operation of the autotransformer the brush-to-track resistance produced heat. It was also known that when exposed to atmospheric conditions and under moderate temperatures, copper is susceptible to the formation of cuprous oxide, a low-resistance oxide which increased the brush-to-track resistance. It was likewise known that when exposed to atmospheric conditions and under higher temperatures, cuprous oxide, although comparatively stable, was converted to cupric oxide, a high-resistance oxide which further increased the brush-to-track resistance. This phenomenon was recognized by Hunt and Wise, who taught that the formation of copper oxide on the contact surface, and the resulting operational difficulties, could be prevented by coating the copper with silver, platinum or rhodium, metals known to be resistant to oxidation.

The trial court found, on the basis of the references hereinabove discussed, and other evidence, that the subject matter of the patent in suit would have been obvious at the time of the alleged invention to a person possessed of the ordinary knowledge and skill of the art, and was therefore not patentable. 35 U.S.C. § 103. This finding, with which we are in full accord, is challenged by the defendant as clearly erroneous.

The alleged invention of the patent in suit was directed to the solution of a problem explained by Smiley as follows:

"The transformer is initially designed to provide a satisfactory *brush-to-track resistance* within . . . resistance limits. It has been found, however, that when the apparatus is in continuous use, particularly at elevated temperatures and in regions where industrial vapors or other corrosive influences are present, *the copper track detrimentally oxidizes, contaminates and corrodes, markedly and rapidly increasing, and thus rendering unstable, the resistance of the brush-to-copper track interface.* With long periods of continuous use, indeed, a *progressively destructive cycle* is often initiated in which the increasing oxidation, contamination and *corrosion of the track during the use of the instrument increases the brush-to-track resistance, which, in turn, further increases the temperature at the contact between the brush and track* which still further *increase the oxidation*, contamination and corrosion, until *failure or improper operation of the instrument results from the high temperature.*" (Emphasis added.)

This was substantially the explanation offered by Hunt. The only difference is found in the descriptive language employed.

The defendant argues that Smiley was the first to discover that the operational difficulties inherent in the autotransformer were attributable to the formation of cupric oxide, identified by Hunt as "high-resistance oxide," and not to other suspected causes. The argument is refuted by a substantial evidence to the contrary and fails to accord the Hunt and Wise disclosures their full and proper significance. However, assuming that Smiley was the first to discover the cause of the operational difficulties, the present claim to patentable invention is not thereby enhanced.

The defendant concedes that prior to the application for the patent in suit it was common knowledge that the

formation of low-resistance oxide could be prevented by applying a coating of silver, or other suitable metal, to the commutator track. However, the defendant argues that Smiley's invention is distinguishable in that therein the silver coating is utilized as a means to prevent the formation of high-resistance oxide. This is a hypercritical distinction without a difference.

There is no feature which distinguishes the coated track defined by Smiley from that described by both Hunt and Wise except the function ascribed to it by the defendant. This functional feature neither enhances the claim to patentable invention nor detracts from the pertinency of the prior art. *General Electric Co.* v. *Jewel Co.*, 326 U.S. 242 (1945); *DeForest Radio Co.* v. *General Electric Co.*, 283 U.S. 664 (1931); *Risdon Locomotive Works* v. *Medart*, 158 U.S. 68 (1895); *American Sign & Indicator Corp.* v. *Schulenburg*, 267 F.2d 388 (7th Cir. 1959), cert. den. 361 U.S. 886 (1959); *Application of Lawson*, 228 F.2d 249 (C.C.P.A. 1955). It has been recognized since *Knapp* v. *Morss*, 150 U.S. 221, decided in 1893, that patentable invention consists in the embodiment of new and useful means to achieve a desired result and not in the functions attributed to the means. Where, as here, the allegedly novel feature of the claimed invention is a structural element substantially similar to one of the prior art, even though its function may be different, the similarity is sufficient to negative patentability. Ibid.

Once it was known that the copper track could be protected against oxidation by the application of a coating of silver or other suitable metal, it would have been obvious to the skilled artisan that the same coating would prevent the formation of both the low-resistance and high-resistance oxides. This is unmistakably the teaching of Hunt, although the defendant disputes it. We are of the view

that Smiley contributed nothing to the advance of the art. Assuming that he did, his contribution consisted of nothing more than the application of known means to an analogous use in the same art. This is not invention even though the use was not theretofore contemplated. *General Electric Co.* v. *Jewel Co.*, supra; *Cuno Corp.* v. *Automatic Devices Corp.*, 314 U.S. 84 (1941); *Vandenburgh* v. *Truscon Co.*, 261 U.S. 6 (1923); *B. & M. Corp.* v. *Koolvent Aluminum Awning Corp.*, 257 F.2d 264 (7th Cir. 1958); *United Mattress Mach. Co.* v. *Handy Button Mach. Co.*, 207 F.2d 1 (3rd Cir. 1953); *R. G. Le Tourneau, Inc.* v. *Gar Wood Industries*, 151 F.2d 432 (9th Cir. 1945), cert. den. 327 U.S. 782 (1945). Such applications are regarded as involving nothing more than expected mechanical skill. Ibid.

The trial court found the patent invalid also on the ground that the alleged invention was known and used by others long prior to Smiley's application for the patent in suit, which was filed in April of 1951. 35 U.S.C. § 102. It found that one Alfred B. Nelson, a former employee of the defendant and president of the plaintiff since 1946, first, conceived the alleged invention; second, reduced it to practice in 1941; and third, thereafter "proceeded to silverplate its commutator tracks, and to sell these plated . . . transformers to customers; . . . ." The evidence upon which these findings were predicated is fully summarized in the opinion of the court, 203 F. Supp., at pages 872-4. Any further summarization would be unnecessarily repetitious.

The defendant challenges the pertinent findings as clearly erroneous. It is argued that there is no evidence "of which defendant is aware that in any way supports these facts, except for innuendos to be drawn from several oral, unsupported and uncorroborated statements of Mr. Nelson, given over twenty years after the supposed event

and directly contradictory of the documentary evidence and the conduct of the plaintiff." We concede that if the findings rested solely on the testimony of Nelson, there would be a serious question as to the sufficiency of the evidence. *Smith* v. *Hall*, 301 U.S. 216, 222 (1937); *Anderson Company* v. *Trico Products Corporation*, 267 F.2d 700 (2d Cir. 1959). However, we find upon examination of the entire record that the findings are supported by substantial evidence. While it appears that Nelson was the principal witness, it also appears that his testimony was amply corroborated by testimonial and documentary evidence which the trial court apparently found to be credible. The findings of fact must therefore be accepted by this Court. *Fed. Rules Civ. Proc., Rule* 52(a), 28 U.S.C.A.; *Jiffy Enterprises, Inc.* v. *Sears, Roebuck & Co.*, 306 F.2d 240 (3rd Cir. 1962); cert. den. 371 U.S. 922 (1962); *R. M. Palmer Company* v. *Luden's, Inc.*, 236 F.2d 496 (3rd Cir. 1956).

Unfair Competition

The parties to this litigation are admittedly competitors engaged in the manufacture and sale of autotransformers. The product of the defendant is sold under the registered trade name "VARIAC," and that of the plaintiff is sold under the registered trade name "POWERSTAT." However, the claim of unfair competition does not involve trade name infringement.

The autotransformer of the defendant is enclosed in a six-sided steel housing of simple design, which the defendant here asserts has acquired a secondary meaning. The structure is adequately and clearly described in the opinion of the court below. The claim for unfair competition is predicated solely on the charge that the plaintiff's autotransformer is enclosed in a housing which, in style

and general appearance, is confusingly similar to the defendant's housing. There is no evidence that the plaintiff either misrepresented the source of its products or palmed them off as those of the defendant.

The burden was upon the defendant to prove by a preponderance of evidence that: first, its housing was so distinctive in design and general appearance as to identify the source of the enclosed autotransformer; second, purchasers were moved to buy the product because of its source; and third, the secondary meaning had been established when the plaintiff adopted the allegedly similar housing. *Sylvania Electric Products* v. *Dura Electric Lamp Company*, 247 F.2d 730, 733 (3rd Cir. 1957); *Lucien Lelong, Inc.* v. *Lander Co.*, 164 F.2d 395, 397 (2nd Cir. 1947); *Gum* v. *Gumakers of America*, 136 F.2d 957, 959 (3rd Cir. 1943); *American Fork & Hoe Co.* v. *Stampit Corporation*, 125 F.2d 472, 475 (6th Cir. 1942); *Crescent Tool Co.* v. *Kilborn & Bishop Co.*, 247 Fed. 299, 300 (2nd Cir. 1917). The burden was upon the defendant to show that the primary significance of its housing in the minds of the prospective purchasers was not the product but the manufacturer. *Kellogg Co.* v. *Nat. Biscuit Co.*, 305 U.S. 111, 118 (1938). The trial judge, applying these established principles, concluded that the defendant had failed to sustain the burden of proof. We are in accord with this conclusion.

The trial judge found affirmatively that the imitated features of the defendant's housing were functional. The defendant now argues that the finding was limited to certain features which the trial judge emphasized in his opinion. We cannot agree with this narrow construction; it clearly appears from the trial court's opinion that every element of the defendant's structure was considered. However, assuming the narrow construction to be correct, we

consider those features of the plaintiff's housing which the defendant now urges were nonfunctional and the use of which should have been enjoined.

The defendant's brief points to seven structural elements of the plaintiff's housing as nonfunctional. After an examination of the testimony, the photographs and physical exhibits, we are convinced that these elements were functional in that they contributed to the utility and efficiency of the housing and its general appearance. However, even assuming that these features were nonfunctional, the claim of secondary meaning cannot be upheld. The burden was upon the defendant to prove that it was from these features that the claimed secondary meaning was derived. *Crescent Tool Co.* v. *Kilborn & Bishop Co.*, supra. The burden was not sustained.

However, assuming that the defendant's housing had acquired a secondary meaning, as here contended, but that its imitated elements were functional, as the trial court correctly found, the defendant was not entitled to prevail. Absent proof of misrepresentation or palming off, the essence of unfair competition is the probability of consumer confusion. *Surgical Supply Service, Inc.* v. *Adler*, F.2d (3rd Cir. 1963); *Flintkote Co.* v. *Tizer*, 266 F.2d 849, 852 (3rd Cir. 1959); *Lucien Lelong, Inc.* v. *Lander Co.*, *supra*. If the imitated features of an article of manufacture are functional but have also acquired a secondary meaning, the imitator may be required to take reasonable precautions to protect prospective purchasers against the probability of deception as to the source of the product. *Sylvania Electric Products* v. *Dura Electric Lamp Co.*, supra, at page 734; *Restatement of the Law, Torts*, § 741(j). Such precautions had been taken by the plaintiff before this action was brought.

The face of the defendant's housing bears a plate on which there prominently appears the name "VARIAC," accompanied by a stylized letter "R," disposed within a circle immediately to the right of that name. The name and address of the defendant also appear on the plate. The top surface of the plaintiff's housing bears a plate on which there prominently appears, in red letters, the name "POWERSTAT." The name and address of the plaintiff also appear on the plate. The similarities in the housings are solely in their functional features, and to these the defendant may not claim a right to exclusive use. See the cases hereinabove cited. We might add that there is nothing in the general appearance of the plaintiff's housing that would mislead even the most casual purchaser as to the source of the product.

The judgment of the District Court will be affirmed.

A true Copy:

Teste:

Clerk of the United States Court of Appeals for the Third Circuit.